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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/634,312	08/08/2000	Mikio Kurihara	JP9-1999-0161US1(8728-410	5044

46069 7590 12/18/2006
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EXAMINER

DUONG, THOI V

ART UNIT	PAPER NUMBER
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2871

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	12/18/2006	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

09/634,312

Applicant(s)

KURIHARA ET AL.

Examiner

Thoi V. Duong

Art Unit

2871

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 03 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 September 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11,13-15 and 18-20 ~~is/are~~ pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-11,13-15 and 18-20 ~~is/are~~ rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☒ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892) None
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

1. A request for continued examination under 37 CFR 1.114 was filed in this application after appeal to the Board of Patent Appeals and Interferences, but prior to a decision on the appeal. Since this application is eligible for continued examination under 37 CFR 1.114 and the fee set forth in 37 CFR 1.17(e) has been timely paid, the appeal has been withdrawn pursuant to 37 CFR 1.114 and prosecution in this application has been reopened pursuant to 37 CFR 1.114. Applicant's submission filed on September 27, 2006 has been entered.

Accordingly, claims 1-6, 8, 10, 11, 13-15 and 18-20 were amended, and claims 12, 16 and 17 were cancelled. Currently, claims 1-11, 13-15 and 18-20 are pending in this application.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 1, 5, 10 and 13 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The specification does not describe the limitation "wherein the first and second members are adapted to slide relative to each other along the first and second contact surfaces in response to a contact force

Art Unit: 2871

while maintaining contact between the first and second contact surfaces to control the gap width" recited in claims 1, 5, 10 and 13. According to page 36, line 19 through page 37, line 2, the specification describes that "even if a load is applied in a planar direction, the contact surfaces of the spacers 19a and 19b are rubbed by each other." Nowhere in the specification describes the first and second members adapted to slide relative to each other along the first and second contact surfaces in response to a contact force.

Claims 2-4, 6-9, 11, 14, 15 and 18-20 are also rejected since they are dependent on the above rejected claims.

Claim Objections

4. Claim 1 is objected to because of the following informalities: claim 1 recites the limitation "each columnar spacer" in line 15. There is insufficient antecedent basis for this limitation in the claim. Appropriate correction is required.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. **Claims 1, 2, 5-12, 19 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fujimori et al. (Fujimori, USPN 5,852,487) in view of Hasegawa et al. (Hasegawa, USPN 5,499,128).**

Re claims 1, 10 and 12, as shown in Fig. 3, Fujimori discloses a touch sensor type liquid crystal display comprising:

a liquid crystal display panel 200a having first and second substrates 1, 2 arranged oppositely to each other by a specified gap (col. 7, lines 39-50);

a touch sensor 200b added to the liquid crystal display panel including fixed and movable electrode plates 2 and 3 (col. 8, lines 8-27 and 42-47); and

a plurality of spacers 11 interposed between the first and second substrates to control the gap between the first and second substrates (col. 12, lines 42-48).

wherein, re claims 2 and 11, said plurality of columnar spacers 11 are arranged in a uniform pattern in a planar direction of the liquid crystal display panel (col. 8, lines 62-64) and arranged in a black matrix region of the liquid crystal display panel (col. 20, lines 30-38).

Re claims 5-9, Fujimori further discloses a plurality of grids 14 arranged between the fixed and movable electrode plates,

wherein the spacers are arranged to be coincident with the grids; and

wherein said movable and fixed electrode plates are made of plastic films (col. 8, lines 28-57).

Fujimori et al. discloses that the touch sensor type liquid crystal display is a color display (col. 20, lines 38-41) wherein the first and second substrates of the liquid crystal display panel are arranged oppositely to each other by interpolating a liquid crystal layer, said movable electrode plate 3 serves as a touch sensor arranged oppositely to the second substrate by a specified second gap width, and a conductive film 5a is provided to serve as a touch sensor formed on a surface of the second substrate which faces the movable electrode plate (col. 8, lines 8-13).

Fujimori discloses a touch sensor type liquid crystal display that is basically the same as that recited in claims 1, 5, 10 and 12 except for each spacer comprising a first member fixedly formed on the first substrate and having a first contact surface, and a second member fixedly formed on the second substrate and having a second contact surface in contact with the first contact surface of the first member, wherein the first and second members are adapted to slide relative to each other along the first and second contact surfaces in response to a contact force while maintaining contact between the first and second contact surfaces to control the gap width.

As shown in Figs. 12 and 13, Hasegawa discloses a liquid crystal display device comprising a plurality of spacers, wherein each spacer comprises a first member 112d (bottom) fixedly formed on the first substrate 111 and having a first contact surface, and a second member 112d (top) fixedly formed on the second substrate 141 and having a second contact surface in contact with the first contact surface of the first member,

wherein, re claim 19, each of the first and second members of each spacer is columnar in shape (col. 23, lines 61-65); and

wherein, re claim 20, the cross-section of each spacer parallel to the plane of a substrate is variable since the intermediate point (width L2) of each spacer is smaller in area than either of the substrate contact surfaces (width L1) (col. 19, lines 47-57 and col. 24, lines 12-20).

Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the touch sensor type liquid crystal display of Fujimori with the teaching of Hasagawa by forming each spacer comprising a first

Art Unit: 2871

member fixedly formed on the first substrate and having a first contact surface, and a second member fixedly formed on the second substrate and having a second contact surface in contact with the first contact surface of the first member in order to permit suppressing the light leakage around the spacer and hence, achieving a good picture image display (col. 24, lines 21-24).

Since Hasagawa discloses a spacer substantially identical to that of the claims, claimed properties or functions are presumed to be inherent (see MPEP 2112.01). Therefore, in addition to maintain contact between the first and second contact surfaces to control the gap width, it is obvious that the first and second members of the spacer of Hasagawa are also adapted to slide relative to each other along the first and second contact surfaces in response to a contact force.

7. Claims 13-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hirakata et al. (Hirakata, Pub. No. US 2001/0051398 A1) in view of Hasegawa et al. (Hasegawa, USPN 5,499,128).

Re claim 13, as shown in Fig. 18, Hirakata discloses a liquid crystal display comprising:

a liquid crystal display panel having first and second substrates 101 and 201 arranged oppositely to each other by a specified gap width (paragraph 190), and

a plurality of spacers 220 (gap retaining member) interposed between the first and second substrates to control the gap width between the first and second substrates (paragraph 190),

wherein arranged densities of said spacers are not uniform as shown in Fig. 21A (paragraph 201); and

wherein, re claims 14 and 18, an arranged density of the spacers 710 are arranged at a high density in a center of the liquid crystal display panel (as pixel confronting area 202) so as not to be formed in the driver-circuit confronting areas 203 and 204 as shown in Fig. 23 (paragraphs 234 and 235);

Hirakata discloses a liquid crystal display that is basically the same as that recited in claim 13 except for each spacer comprising a first member fixedly formed on the first substrate and having a first contact surface, and a second member fixedly formed on the second substrate and having a second contact surface in contact with the first contact surface of the first member, wherein the first and second members are adapted to slide relative to each other along the first and second contact surfaces in response to a contact force while maintaining contact between the first and second contact surfaces to control the gap width.

As shown in Figs. 12 and 13, Hasegawa discloses a liquid crystal display device comprising a plurality of spacers, wherein each spacer comprises a first member 112d (bottom) fixedly formed on the first substrate 111 and having a first contact surface, and a second member 112d (top) fixedly formed on the second substrate 141 and having a second contact surface in contact with the first contact surface of the first member,

wherein, re claim 15, each of the first and second members of each spacer is columnar in shape (col. 23, lines 61-65).

Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the touch sensor type liquid crystal display of Hirakata with the teaching of Hasagawa by forming each spacer comprising a first member fixedly formed on the first substrate and having a first contact surface, and a second member fixedly formed on the second substrate and having a second contact surface in contact with the first contact surface of the first member in order to permit suppressing the light leakage around the spacer and hence, achieving a good picture image display (col. 24, lines 21-24).

Since Hasagawa discloses a spacer substantially identical to that of the claims, claimed properties or functions are presumed to be inherent (see MPEP 2112.01). Therefore, in addition to maintain contact between the first and second contact surfaces to control the gap width, it is obvious that the first and second members of the spacer of Hasagawa are also adapted to slide relative to each other along the first and second contact surfaces in response to a contact force.

8. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fujimori et al. (Fujimori, USPN 5,852,487) in view of Hasegawa et al. (Hasegawa, USPN 5,499,128) as applied to claims 1, 2, 5-12, 19 and 20 above and further in view of Hatano et al. (Hatano, USPN 6,331,881 B1).

The touch sensor type liquid crystal display of Fujimori et al. as modified in view of Kishimoto et al. above includes all that is recited in claim 3 except for arranging said plurality of spacers in a non-uniform pattern in a planar direction of the liquid crystal display panel, wherein the non-uniform pattern comprises at least a first pattern of

spacers having a first arranged density and a second pattern of spacers having a second arranged density which is greater than the first arranged density.

As shown in Fig. 3, Hatano discloses a liquid crystal display comprising a plurality of gap controlling spacers (col. 6, lines 56-61) arranging in a non-uniform pattern in a planar direction of the liquid crystal display panel, wherein the non-uniform pattern comprises at least a first pattern B1 of spacers having a first arranged density and a second pattern of spacers B2, B3 or B4 having a second arranged density which is greater than the first arranged density B1 so as to suppress change in display state which may be caused by an externally applied pressure even if the plate is soft (col. 11, lines 1-7).

Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify the touch sensor type liquid crystal display of Fujimori with the teaching of Hatano by arranging said plurality of spacers in a non-uniform pattern in a planar direction of the liquid crystal display panel, wherein the non-uniform pattern comprises at least a first pattern of spacers having a first arranged density and a second pattern of spacers having a second arranged density which is greater than the first arranged density in order to obtain a high self-holding property and suppress change in display state for improving viewing angle (col. 11, lines 1-10).

9. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fujimori et al. (Fujimori, USPN 5,852,487) in view of Hasegawa et al. (Hasegawa, USPN 5,499,128) and Hatano et al. (Hatano, USPN 6,331,881 B1) as applied to

claim 3 above, and further in view of Hirakata et al. (Hirakata, Pub. No. US 2001/0051398 A1).

The touch sensor type liquid crystal display of Fujimori as modified in view of Hasegawa and Hatano above includes all that is recited in claim 4 except for the second pattern of spacers disposed in a center of the liquid crystal display panel.

As shown in Fig. 21A, Hirakata discloses a liquid crystal panel comprising gap controlling spacers 220, wherein an arranged density of said gap controlling spacers is high in a center of the liquid crystal display panel (pixel confronting area 202).

Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify the touch sensor type liquid crystal display of Fujimori with the teaching of Hirakata by arranging the second pattern of spacers disposed in a center of the liquid crystal display panel in order to prevent TFT's from being damaged by preventing unnecessary stress and provide a display device that is free of a cell thickness variation and display unevenness (paragraphs 25 and 26).

Response to Arguments

10. Applicant's arguments filed September 27, 2006 have been fully considered but they are not persuasive.

Applicant argued that the Examiner's characterization of the polymer projections 11 serving the functions as "spacers" is erroneous on its face in view of the express teachings of Fujimori. The Examiner disagrees with Applicant's remarks since as clearly showed in Fig. 3, Fujimori discloses that the polymer projection 11 prevents the second substrate 2 of the LCD device 300 from being deformed by the pressure applied when

Art Unit: 2871

the touch key device 300b is pressed to maintain the cell thickness (col. 12, lines 42-48).

Applicant further argued that Hasagawa does not disclose that the first and second members are adapted to slide relative to each other along the first and second contact surfaces in response to a contact force while maintaining contact between the first and second contact surfaces to control the gap width. The Examiner disagrees since Hasagawa discloses a spacer substantially identical to that of the claims, claimed properties or functions are presumed to be inherent (see MPEP 2112.01). Therefore, in addition to maintaining contact between the first and second contact surfaces to control the gap width, it is obvious that the first and second members of the spacer of Hasagawa are also adapted to slide relative to each other along the first and second contact surfaces in response to a contact force. It is also noted that the specification does not disclose that the first and second members are adapted to slide relative to each other along the first and second contact surfaces in response to a contact force.

Accordingly, the combination of Fujimori and Hasegawa produces the claimed invention; therefore, a prima facie case of obviousness has been legally established.

Similarly, with respect to claim 13, Hiraka also discloses a plurality of spacers interposed between the first and second substrates to control the gap width between the first and second substrates; therefore, the combination of Hirakata and Hasegawa has also legally established a prima facie case of obviousness.

Art Unit: 2871

Conclusion

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thoi V. Duong whose telephone number is (571) 272-2292. The examiner can normally be reached on Monday-Friday from 8:30 am to 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Nelms, can be reached at (571) 272-1787.

Thoi V. Duong

A handwritten signature in black ink, appearing to read 'Thoi V. Duong', written in a cursive style.

12/04/2006